

REMARKS

In an Office Action dated April 13, 2004, (paper no. 3) the Examiner rejected claims 1, 2, 4, 7, and 9 under 35 U.S.C. §102(e) as being anticipated by Niegel et al. (U.S. patent no. 6,625,136, hereinafter referred to as "Niegel"). The Examiner rejected claims 3 and 8 under 35 U.S.C. §103(a) as being unpatenable over Niegel. The Examiner rejected claims 5, 6, and 10-24 under 35 U.S.C. §103(a) as being unpatenable over Niegel in view of Gilhousen (U.S. patent no. 5,751,761). The rejections and objections are traversed and reconsideration is hereby respectfully requested.

The Examiner rejected claims 1, 2, 4, 7, and 9 under 35 U.S.C. §102(e) as being anticipated by Niegel. Claim 1, as amended, teaches a modulation scheme in which a codeword assigned to each transmission rate of multiple transmission rates is independent of the codewords assigned to other transmission rates of the multiple transmission rates, rather than to each user of multiple users. The distribution of codewords is designed to allow a receiving device to determine a transmission rate of the received data, not a user who transmitted the data.

Niegel teaches a CDMA modulation scheme in which each channel of multiple channels is assigned a code sequence that is orthogonal to the code sequences assigned to other channels of the multiple channels, as is typical of a CDMA communication system. Therefore, these code sequences are channel-dependent and, since in CDMA systems code sequences constitute the communication channels that are assigned to system users, user-dependent. A number of copies of the assigned code sequence is then stored that corresponds to the data rate associated with the channel. For example, for a low-rate channel a single 8 bit sequence may be stored, while for a mid-rate channel that is twice the rate of the low-rate channel then two copies of the 8 bit sequence may be stored. As a result, the spreading codes used for the different rates by a single user are not orthogonal.

By storing a number of copies of a code sequence that corresponds to a data rate of the channel, Niegel teaches a simplified spreading hardware by allowing for use of a same spreading/processing hardware unit regardless of the data rate of the transmission. Nowhere does Niegel teach the features of claim 1 of a modulation scheme in which a

codeword assigned to each transmission rate of multiple transmission rates is independent of the codewords assigned to other transmission rates of multiple transmission rates, rather than to each channel/user of multiple channels/users. Accordingly, the applicants respectfully request that claim 1 may now be passed to allowance.

Since claims 2-5 and 25 depend upon allowable claim 1, the applicants respectfully request that claims 2-5 and 25 may also be passed to allowance.

The Examiner rejected claims 5, 6, and 10-24 under 35 U.S.C. §103(a) as being unpatentable over Niegel in view of Gilhousen. Claim 6 provides a method or decoding data that includes steps of determining a multiple spreading codes, wherein each spreading code of the plurality of spreading codes has a length and value associated with a respective transmission rate of a plurality of potential transmission rates, wherein the value of each spreading code of the multiple spreading codes is uncorrelated with a value of other spreading codes of the multiple spreading codes that are associated with other transmission rates of the multiple potential transmission rates, and wherein each spreading code of the multiple spreading codes is not user dependent, and despreading the input data with each spreading code of the plurality of spreading codes to form multiple despread data sequences. As noted above, Niegel does not teach these features of claim 6.

Similar to Niegel, Gilhousen merely teaches assigning a spreading code to each channel of multiple channels. Again, these code sequences are channel-dependent and, since in CDMA systems code sequences constitute the communication channels that are assigned to system users, user-dependent. Nowhere does Gilhousen teach the features of claim 6 of determining a multiple spreading codes, wherein each spreading code of the plurality of spreading codes has a length and value associated with a respective transmission rate of a plurality of potential transmission rates, wherein the value of each spreading code of the multiple spreading codes is uncorrelated with a value of other spreading codes of the multiple spreading codes that are associated with other transmission rates of the multiple potential transmission rates, and wherein each spreading code of the multiple spreading codes is not user dependent. Since these

features are not taught by Niegel or Gilhousen, individually or in combination, the applicants respectfully request that claim 6 may now be passed to allowance.

Since claims 7-10 depend upon allowable claim 6, the applicants respectfully request that claims 7-10 may also be passed to allowance.

Claim 11 provides an apparatus that includes a code generator that outputs a spreading code, wherein the spreading code has a length and value associated with the transmission rate and wherein the value is uncorrelated with values of spreading codes associated with other transmission rates and is not user dependent. Claim 21 provides a symbol spreader having the convolutionally encoded data and a transmission rate as an input and outputting spread symbols, wherein the spread symbols are spread with a spreading code that has a length and value associated with the transmission rate and wherein the value is uncorrelated with values of spreading codes associated with other transmission rates and is not user dependent. As noted above, the code generator of claim 11 and the symbol spreader of claim 21 features are not taught by Niegel or Gilhousen, individually or in combination. Accordingly, the applicants respectfully request that claims 11 and 21 may now be passed to allowance.

Since claims 12-14 depend upon allowable claim 11 and claims 22-24 depend upon allowable claim 21, the applicants respectfully request that claims 12-14 and 22-24 may also be passed to allowance.

Claim 15 provides an apparatus for decoding received data that includes a first despreader having data as an input and outputting the data exclusive OR'd with a first spreading code having a first value and a first length and a first Viterbi decoder having the data exclusive OR'd with the first spreading code as an input and outputting decoding metrics. The apparatus further includes a second despreader having the data as an input and outputting the data exclusive OR'd with a second, different spreading code having a second value and a second length and a second Viterbi decoder having the data exclusive OR'd with the second spreading code as an input and outputting decoding metrics to the rate determiner. The apparatus further includes a rate determiner that determines a transmission rate of the data based on the decoding metrics output by the first Viterbi

decoder and the second Viterbi decoder. Niegel and Gilhousen merely teach an encoder. Furthermore, although Viterbi decoders are well known in the art, the use of two Viterbi decoders that each decode received data using different spreading codes and a rate determiner that determines a rate of the received data based on the output of the two Viterbi decoders is not known. Therefore, the applicants respectfully contend that claim 15 is not disclosed by the prior art and respectfully request that claim 15 may be passed to allowance.

Since claims 16-20 depend upon allowable claim 15, the applicants respectfully request that claims 16-20 may also be passed to allowance.

As the applicants have overcome all substantive rejections and objections given by the Examiner and have complied with all requests properly presented by the Examiner, the applicants contend that this Amendment, with the above discussion, overcomes the Examiner's objections to and rejections of the pending claims. Therefore, the applicants respectfully solicit allowance of the application. If the Examiner is of the opinion that any issues regarding the status of the claims remain after this response, the Examiner is invited to contact the undersigned representative to expedite resolution of the matter.

Respectfully submitted,
Lee Proctor, et al.

By: 

Steven A. May
Attorney for Applicant
Registration No. 44,912
Phone No.: 847/576-3635
Fax No.: 847/576-3750